REMARKS

Claims 1-14, 16-33, 35-49, 51-68, 70-87, and 89-92 remain pending in the Application. Claims 1-14, 16-33, 35-49, 51-68, 70-87, and 89-92 are rejected. Claims 15, 34, 50, 69, and 88 have been cancelled. No new matter has been added. Applicants respectfully request reconsideration in view of the following remarks.

I. Claim Rejections under 35 U.S.C. § 103

A. The Examiner rejected claims 1-14, 16-18, 20-33, 35-37, 39-49, and 51-53 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,307,433 B1 ("Gabara") in view of U.S. Patent No. 5,081,713 ("Miyazaki"). Applicants respectfully traverse the rejection.

a. Claim 1 and its dependent claims

Claim 1 is directed to a filter calibration circuit including a comparator, a calibration logic unit, a DC voltage source, and a variable-gain amplifier. The comparator generates a comparator output based on a filter output amplitude signal and a reference amplitude signal, the filter output amplitude signal corresponding to an amplitude of an output signal produced by a filter circuit that is to be calibrated to a desired frequency. The calibration logic unit receives the comparator output and produces a component code to be used by the filter circuit in adjusting one or more component values in the filter circuit. The calibration logic unit further varies a gain of the variable-gain amplifier based on the comparator output. The DC voltage source produces the reference amplitude signal.

The Examiner rejected claim 1, stating that Gabara's monitoring circuit and tuning circuit are Applicants' comparator and calibration logic unit, respectively. The Examiner acknowledges that Gabara fails to teach or suggest Applicants' claimed variable-gain amplifier, the calibration logic unit operable to vary a gain of the variable-gain amplifier based on the comparator output. The Examiner suggests, however, that Miyazaki discloses Applicants' variable gain amplifier, and that it would have been obvious "to incorporate the selection techniques taught by Miyazaki into the art of Gabara as to include a variable gain amplifier and amplifier gain control circuit to adaptively control the output signal at a desired power level." Applicants respectfully disagree.

Applicants respectfully submit that there is no reasonable rationale for incorporating Miyazaki's variable gain amplifier into Gabara's filter.

Gabara shows a tunable bandpass filter. An input data signal with a dominant frequency f_0 is applied to the filter. (Fig. 1; Abstract; col. 2, lines 66-67). The filter output signal is passed to a peak/power detector, which measures the power magnitude of the signal and passes this magnitude value to a monitoring circuit. (Fig. 1; Abstract; col. 3, lines 9-12). The monitoring circuit compares the present power magnitude value to the previously-measured power magnitude, and outputs a tuning signal reflecting this comparison to a finite state machine. (Col. 3, lines 13-17). The finite state machine adjusts the tuning signal to maximize the power of the filter output signal. (Col. 3, lines 17-19). When the filter output signal achieves maximum power, this indicates that the filter is tuned to its dominant frequency. (Fig. 2; Abstract).

The Examiner acknowledges that Gabara's tunable bandpass filter does not include Applicants' claimed variable-gain amplifier having a gain based on the comparator output. The Examiner suggests that Miyazaki shows Applicants' claimed amplifier and that it would have been obvious to incorporate Miyazaki's amplifier into Gabara's design "to adaptively control the output signal at a desired power level." However, as Applicants discussed in their response to the previous Office Action – and as the Examiner agreed in a telephonic interview held on September 20, 2007 – Gabara's tuning algorithm would not work properly if a variable-gain amplifier were incorporated into the design. Gabara's monitoring circuit compares the present and previous power magnitudes of the filtered signal, and Gabara's finite state machine adjusts the tuning signal to achieve maximum power based on this comparison. (Col. 3, lines 13-19). Gabara's tuning algorithm depends exclusively on the *ratio* of the current and previously-measured signal powers. If Gabara's filter were modified such that it amplified signals based on the output of the monitoring circuit, the comparison of the current and previous power values would no longer represent the real-world deviance from maximum power. As the Examiner agreed previously, this would reduce the effectiveness of Gabara's tuning method. Therefore, no basis exists for incorporating Miyazaki's variable gain amplifier into Gabara's filter circuit. *See, e.g., In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984) (no *prima facie* case of obviousness exists if

the combination would render the prior art invention unsatisfactory for its intended purpose). Applicants respectfully submit that claim 1 is allowable for at least these reasons.

Claims 2-14 and 16-18 depend from claim 1, and are allowable for at least the reasons given above with respect to claim 1.

Claim 3 is also separately allowable for at least the following additional reasons. Claim 3 recites that the filter circuit includes an LC tank circuit. The Examiner points to Gabara's statement that "the performance of. . . inductor-capacitance ("LC") based circuits are tuned" as showing this limitation. As Applicants pointed out in their response to the previous Office Action, a generic LC circuit is not the same as an LC *tank* circuit: a tank circuit refers to a particular inductor-capacitor configuration, i.e., a parallel or series LC configuration. (*See* Application, para. [0005]). Additionally, nothing in Gabara suggests that Gabara's filter 12 *includes* an LC tank circuit. Indeed, the Examiner's cited passage expressly differentiates between "bandpass filter circuits [i.e., Gabara's bandpass filter] and *other circuits, such as indictor-capacitance* ("LC") based circuits." Gabara fails to teach or suggest a filter circuit that includes an LC tank circuit. Applicants respectfully submit that claim 3 is allowable for at least these additional reasons.

Claim 17 is also separately allowable for at least the following additional reasons. Claim 17 recites that the filter calibration circuit is operable to calibrate the filter circuit to the desired frequency without requiring a reduction in a quality factor of the filter circuit. The Examiner suggests that because Gabara shows "varying [the] center frequency not bandwidth, thus a quality factor is maintained." However, a filter's quality factor Q depends on the ratio of the center frequency to the bandwidth. (*See* Application, para. [0002]). Varying the center frequency therefore directly affects the quality factor. By the Examiner's own acknowledgement, Gabara's filter varies the center frequency. Gabara's filter is consequently not operable to calibrate the filter circuit to the desired frequency without requiring a reduction in a quality factor. Applicants respectfully submit that claim 17 is allowable for at least these additional reasons.

b. Claim 20 and its dependent claims

Claim 20 is directed to a filter calibration circuit that includes comparing means, code generating means, sourcing means and amplifying means. The comparing means generates a comparator output based on a filter output amplitude signal and a reference amplitude signal, the filter output amplitude signal corresponding to an amplitude of an output signal produced by a filtering means that is to be calibrated to a desired frequency. The code generating means receives the comparator output and produces a component code to be used by the filtering means in adjusting one or more component values in the filtering means. The code generating means further varies a gain of the amplifying means based on the comparator output. The sourcing means produces the reference amplitude signal.

The Examiner acknowledges that Gabara fails to teach or suggest Applicants' claimed amplifying means. As discussed above with respect to claim 1, no reasonable rationale exists for incorporating Miyazaki's amplifier into Gabara's filter. Applicants respectfully submit that claim 20 is allowable over Gabara for at least these reasons.

Claims 21-33 and 35-37 depend from claim 20, and are allowable for at least the reasons given with respect to claim 20.

Claim 22 is also separately allowable for at least the additional reasons given with respect to claim 3.

Claim 36 is also separately allowable for at least the additional reasons given with respect to claim 17.

c. Claim 39 and its dependent claims

Claim 39 is directed to a method for calibrating a filter circuit that receives an input signal and produces a filtered output signal. The method includes generating a comparator output based on a filter output amplitude signal and a reference amplitude signal. The filter output amplitude signal corresponds to an amplitude of the filtered output signal at a desired frequency. The method further includes generating a component code based on the comparator output, adjusting one or more component values in the filter circuit based on the component code, producing a fixed DC reference amplitude signal, and varying a gain based on the comparator output.

The Examiner acknowledges that Gabara fails to teach or suggest varying a gain based on the comparator output. As discussed above with respect to claim 1, no reasonable rationale exists for incorporating Miyazaki's amplifier into Gabara's filter. Applicants respectfully submit that claim 39 is allowable over Gabara for at least these reasons.

Claims 40-49 and 51-53 depend from claim 39, and are allowable for at least the reasons given with respect to claim 39.

Claim 52 is also separately allowable for at least the additional reasons given with respect to claim 17.

B. The Examiner rejected claims **19, 38, and 54** under 35 U.S.C. § 103(a) as being unpatentable over Gabara in view of Miyazaki.

Claims 19, 38, and 54 recite compliance with IEEE standards 802.11, 802.11a, 802.11b, 802.11e, 802.11g, 802.11h, 802.11i, 802.11n, and 802.16. The Examiner acknowledges that Gabara fails to teach or suggest Applicants' claimed limitations. Despite the Examiner's purported reliance on Miyazaki, Miyazaki also fails to disclose compliance with any IEEE standards and therefore fails to cure Gabera's deficiency. However, the Examiner takes Official Notice that a filter calibration circuit compliant with IEEE standards is well-known in the art and suggests that "a person skilled in the art would easily incorporate this teaching as to increase the functionality."

Claims 19, 38, and 54 depend respectively from claims 1, 20, and 39, and are allowable for at least the reasons given above with respect to claims 1, 20, and 39.

Further, Applicants respectfully submit that the Examiner's unsupported reasoning is insufficient to establish a *prima facie* case of obviousness with respect to claims 19, 38, and 54. For example, the Examiner has failed to state the manner in which this incorporation could be successfully accomplished. *See, e.g., KSR Intern. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007), *citing In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (stating that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of

obviousness"). Applicants respectfully submit that claims 19, 38, and 54 are allowable for at least these additional reasons.

C. The Examiner rejected claims **55-68, 70-87, and 89-92** under 35 U.S.C. § 103(a) as being unpatentable over Gabara in view of Miyazaki and U.S. Patent No. 6,766,150 ("Johnson").

a. Claim 55 and its dependent claims

Claim 55 is directed to a wireless transceiver including a transmitter that transmits a modulated carrier signal, the transmitter including a filter circuit that filters the modulated carrier signal, a calibration circuit that calibrates the filter circuit to a desired frequency, a DC voltage source, and a variable-gain amplifier. The calibration circuit includes a comparator and a calibration logic unit. The comparator generates a comparator output based on a filter output amplitude signal and a reference amplitude signal, the filter output amplitude signal corresponding to an amplitude of an output signal produced by the filter circuit. The calibration logic unit receives the comparator output and produces a component code to be used by the filter circuit in adjusting one or more component values in the filter circuit. The calibration logic unit further varies a gain of the variable-gain amplifier based on the comparator output. The DC voltage source produces the reference amplitude signal.

The Examiner acknowledges that Gabara fails to teach or suggest Applicants' claimed variable-gain amplifier, the calibration logic unit operable to vary a gain of the variable-gain amplifier based on the comparator output. As discussed above with respect to claim 1, no reasonable rationale exists for incorporating Miyazaki's amplifier into Gabara's filter. Johnson fails to correct for this deficiency; Johnson's system for turning a narrowband cavity filter does not include variable-gain amplifiers, and the Examiner does not contend otherwise. Therefore, Applicants respectfully submit that claim 55 is allowable over the combination of Gabara and Johnson for at least the reasons given with respect to claim 1.

The Examiner also acknowledges that Gabara fails to teach or suggest Applicants' claimed wireless transceiver. The Examiner suggests that Johnson discloses a system for tuning a narrowband cavity filter in a CDMA transmitter and that it would have been obvious to

"incorporate the [frequency] selection technique taught by Johnson into the art of Gabara as to use the filter circuit in a transmitter circuit to pass the desired signal efficiently." Applicants respectfully disagree. As discussed above, Gabara performs frequency selection by maximizing the power of the filter output signal. In contrast, Johnson's filter performs frequency selection by *minimizing* the filter output signal. Specifically, Johnson's circuit includes a filter calibration controller that stores reference signal levels for various transmit frequencies in its internal software. (Col. 9, lines 35-39). If the signal level of Johnson's filter output does not match the stored signal level for a specified frequency, Johnson's controller decreases a control voltage until the signal level is minimized. (Col. 9, lines 59-62). When the filter output signal is minimized, this indicates that the filter is turned to the center transmit frequency for the selected channel. (Col. 9, lines 62-65).

The Examiner has presented no rationale for incorporating Johnson's signal-minimizing frequency selection technique into Gabera's system, which uses a signal-*maximizing* technique. Therefore, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness with respect to the combination of Gabara and Johnson. Claim 55 is allowable for at least these additional reasons.

Claims 55-68 and 69-74 depend from claim 54, and are allowable for at least the reasons given above with respect to claim 54.

Claim 57 is also separately allowable for at least the additional reasons given above with respect to claim 3.

Claim 71 is also separately allowable for at least the additional reasons given above with respect to claim 17.

b. Claim 74 and its dependent claims

Claim 74 as amended is directed to a wireless transceiver including transmitting means for transmitting a modulated carrier signal. The transmitting means includes a filtering means for filtering the modulated carrier signal, calibrating means for calibrating the filtering means to a desired frequency, sourcing means, and amplifying means. The calibrating means includes comparing means for generating a comparator output based on a filter output amplitude signal

and a reference amplitude signal, the filter output amplitude signal corresponding to an amplitude of an output signal produced by the filtering means, and code generating means for receiving the comparator output and producing a component code to be used by the filtering means in adjusting one or more component values in the filtering means. The code generating means further varies a gain of the amplifying means based on the comparator output. The sourcing means produces the reference amplitude signal.

The Examiner acknowledges that Gabara fails to teach or suggest Applicants' claimed amplifying means. As discussed above with respect to claim 1, no reasonable rationale exists for incorporating Miyazaki's amplifier into Gabara's filter. Johnson fails to correct for this deficiency. Therefore, Applicants respectfully submit that claim 74 is allowable over the combination of Gabara and Johnson for at least the reasons given with respect to claim 1.

The Examiner also acknowledges that Gabara fails to teach or suggest Applicants' claimed wireless transceiver. The Examiner suggests that it would have been obvious to combine Johnson with Gabara to meet this limitation. However, as discussed above, no rationale exists for incorporating the signal-minimizing frequency selection techniques of Johnson into Gabara's signal-maximizing technique. Therefore, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness with respect to the combination of Gabara and Johnson. Claim 74 is allowable for at least these additional reasons.

Claims 75-87 and 88-92 depend from claim 74, and are allowable for at least the reasons given above with respect to claim 74.

Claim 76 is also separately allowable for at least the additional reasons given above with respect to claim 3.

Claim 90 is also separately allowable for at least the additional reasons given above with respect to claim 17.

No fees are believed due. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: April 24, 2008

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